

**REMARKS**

Initially, in the Office Action dated December 29, 2004, the Examiner rejects claims 1-4, 9-12 and 17-20 under 35 U.S.C. §112, first paragraph. Claims 1, 2, 4-6, 8-10, 12-14, 16-18, 20-22 and 24-26 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,341,350 (Miyahara et al.). Claims 3, 7, 11, 15, 19 and 23 have been objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

By the present response, Applicant has amended claims 1, 2, 5, 9, 10, 17, 18, 22, 25 and 26 to further clarify the invention. Claims 1-26 remain pending in the present application.

**Examiner Interview**

Applicants thank the Examiner for the personal interview held March 28, 2005. At the interview, Applicants discussed how the claim limitation "being independent of" was fully supported in Applicants' specification and how this was not disclosed in the cited reference. Also, Applicants discussed how the limitation "the area G being repeatedly located over the entire image data" was not disclosed in the cited reference. The Examiner was not persuaded and stated that further consideration was needed.

**Allowable Subject Matter**

Applicants thank the Examiner for indicating that claims 3, 7, 11, 15, 19 and 23 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

35 U.S.C. §112 Rejections

Claims 1-4, 9-12 and 17-20 have been rejected under 35 U.S.C. §112, first paragraph. In this regard, the Examiner asserts that the concept of “said location of said areas G thus located repeatedly being independent of said digital watermark information” does not have the support in the original disclosure. However, as Applicants stated in Applicants’ previously-filed responses, this limitation in the claims of the present application is fully supported in Applicants’ specification at page 20, line 5 – page 21, line 4. In this portion of Applicants’ specification on page 20, line 5 is disclosed “[t]hen, as previously described referring to Fig. 6, groups G are located one after another to cover all the image data . . .” This occurs after step S1002 as shown in Fig. 8. Then, much later on the same page, and after the description of step S1004, is disclosed “[t]hen, the digital watermark information B<sub>i</sub>, which has been read, is embedded in the corresponding area T<sub>i</sub> of each group G allocated . . . . Therefore, the areas G are located repeatedly independent of the digital watermark information which is embedded after the locating of the areas G to cover all of the image data. Accordingly, Applicants respectfully request that these rejections be withdrawn.

35 U.S.C. §103 Rejections

Claims 1, 2, 4-6, 8-10, 12-14, 16-18, 20-22 and 24-26 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Miyahara et al. Applicants have discussed the deficiencies of Miyahara in Applicants’ previously-filed responses. Applicants provide the following additional remarks.

Regarding claims 1, 2, 5, 6, 9, 10, 13, 14, 17, 18, 21, 22, 25 and 26, Applicants submit that Miyahara et al. does not disclose, suggest or render obvious the limitations in the combination of each of these claims of, inter alia, embedding digital watermark information responding to each of the  $T_1 - T_n$  whose pixel values are changed to each of the digital watermark information  $B_1 - B_n$  and changing the pixel value of each area T according to a bit value, or locating the area G repeatedly over the entire image data, wherein the location of the areas G thus located repeatedly being independent of the digital watermark information. In the "Response to Amendment and Arguments" section of the Office Action, the Examiner asserts that the limitation in Applicants' claims "area G thus located repeatedly being independent of said digital watermark information" is broadly claimed and thus open to subjective interpretation". Applicants respectfully disagree with this assertion. This limitation merely refers to the fact that the areas G are located repeatedly and that this locating has nothing to do with the content of the digital watermark information. Applicants have amended the claims to further clarify the present invention by adding that the locating the area G repeatedly occurs over the entire imaged data. Applicants submit that this limitation is not broad and subject to interpretations since it merely claims that the location of the areas G has nothing to do with the content of the digital watermark information. This would be clearly understood to one of ordinary skill in the art based on Applicants' specification and drawings.

Further, in this section of the Office Action, the Examiner asserts that this limitation is disclosed in Miyahara et al. at col. 5, lines 41-44, col. 6, lines 65-67 – col.

7, lines 1-11, and col. 14, lines 22-35. Applicants have addressed cols. 6 – col. 7 and will again provide details on this following. Regarding col. 5, lines 41-44, this merely states that if the symbol of the water pattern corresponding to the pixel is minus, then the value B is subtracted from the pixel and the processing repeated until all pixels have been processed. This has nothing to do with areas G being repeatedly located over an entire image data independent of digital watermark information. Further, regarding col. 14, lines 22-35, this merely states that if a target code to be watermarked is replaced with a new code, the word length of the code is changed by the replacement in many cases, thereby causing various problems and to prevent such problems, some artifice is required such as examining a code to be targeted for appending a watermark on a code bit string and appending the watermark to a fixed length code part only so that the word length is not changed before and after the appendage of the watermark. Again, this does not disclose or suggest locating an area G repeatedly over an entire image data where the location of the area G thus located repeatedly is independent of the digital watermark information, as recited in the claims of the present application.

Moreover, Miyahara et al. in not disclosing locating the area G repeatedly over the entire image data does not disclose or suggest inserting the watermark pattern over the entire image data, as recited in the claims of the present application. According to the present invention, areas  $T_1 - T_n$  contain pixel values therefore, since the digital watermark information is represented by the areas T and the areas T are located in the area G, which is repeatedly located over the entire image data, the digital watermark information accordingly is located repeatedly over the entire

image data. In contrast, Miyahara et al. discloses in the background section that the original picture can be divided into K pieces of sub-areas and one can put one bit of information into each sub-area and can make  $2^k$  version of a watermark pattern. This implies that one picture has only one watermark pattern inserted. Further, in the background section of Miyahara et al. is disclosed that there are two techniques for appending information associated with image data, where the accompanying information (watermark) is appended to an auxiliary part of the image data, or where the information is appended to a main part (substantially visible) of the image data (see col. 1, line 55 – col. 2, line 1). This also implies that one kind of single watermark pattern is inserted in a part of the picture and not to all of the entire image data, as recited in the claims of the present application. Miyahara et al. further talks about problems with each of these methods. Regarding the second method, Miyahara et al. discloses that when image data is subjected to various signal processing such as noise reduction filtering or the like, the components of the appended accompanying information can be attenuated and become impossible to be extracted. Further, owing to quantization of the high-efficiency coding, components of the appended accompanying information are amplified to an extent to be visible, thereby the image quality becomes degraded or attenuated to the extent that they cannot be extracted, and its original meaning can be lost (see col. 6, lines 48-64). Thus, Miyahara et al. discloses that adding watermark affects quality loss and, therefore, desires to reduce the area to add a watermark. This teaches away from the limitations in the claims of the present application where the watermark is repeated over the entire image data. Miyahara et al. proposes to solve

the problem by teaching to add the watermark without exerting a significant influence to the original image data (see col. 7, lines 25-28).

As noted in Applicants previous response, the Examiner admits that Miyahara et al. does not disclose locating the area G repeatedly, wherein the location of the area G thus located repeatedly being independent of the digital watermark information, but asserts that these limitations in the claims of the present application would be obvious from the disclosure of Miyahara et al. at col. 6, lines 65-67 and col. 7, lines 1-11). However, these portions of Miyahara et al. merely disclose another problematic method of adding the accompanying information associated with image data using a special area on the image so that the components of the accompanying information are not changed by the aforementioned signal processing. This area is provided at only one part thereof, and therefore it is impossible to reserve a sufficient large area for a watermark pattern. For this reason, the evaluation takes on a large value other than zero even when no accompanying information is added. Miyahara et al. further discloses that as a result, when an absolute evaluation criteria is used to judge that some accompanying information is appended if a predetermined threshold value is exceeded, detection of the accompanying information becomes very difficult, and that when the area to which the accompanying information is appended is only one part from a viewpoint of whole image sequence, it becomes considerably difficult to append plural pieces of information. For example, when the whole image is divided into k areas and then the accompanying information is appended to each of these areas, a watermark pattern area for each of these areas becomes smaller depending

on the number of these areas, and therefore detection of the accompanying information becomes substantially impossible (see, col. 7, lines 12-21).

This is not locating the area G repeatedly, wherein the location of the area G thus located repeatedly being independent of the digital watermark information, as recited in the claims of the present application. Miyahara et al. teaches away from these limitations. The portions of Miyahara et al. merely disclose a problematic method of adding the accompanying information associated with image data using a special area on the image so that the components of the accompanying information are not changed by the aforementioned signal processing. This has nothing to do with the limitations in the claims of the present application, and one of ordinary skill in the art would have no motivation to use this method since, as Miyahara et al. has explained, it has several associated problems. Moreover, as has been discussed previously, the limitations in the claims of the present application relate to groups being located on the image data so as to cover all the image data. The cited portions of Miyahara et al. do not disclose or suggest these limitations in the claims of the present application. Further, at the Examiner interview, the Examiner asserted that Figs. 3 and 8 in Miyahara et al. disclose locating the area G repeatedly over the entire image area, however, as pointed out at the interview, these figures merely disclose an enlarged picture of the watermark pattern only (see, col. 7, line 61, and col. 8, line 5).

Regarding claims 4, 8, 12, 16, 20 and 24, Applicants submit that these claims are dependent on one of independent claims 1, 5, 9, 13, 17 and 21 and, therefore, are patentable at least for the same reasons noted previously regarding these

independent claims. For example, Miyahara et al. does not disclose or suggest where each of the areas G includes the areas  $H_1 - H_m$  which have been predetermined in a location so as to be asymmetric in vertical and horizontal directions in the areas G in question, or contents of image processing carried out on the image data being judged.

Accordingly, Applicants submit that Miyahara et al. does not disclose, suggest or render obvious the limitations in the combination of each of claims 1, 2, 4-6, 8-19, 12-14, 16-18, 20-22 and 24-26 of the present application. Applicants respectfully request that these rejections be withdrawn and that these claims be allowed.

In view of the foregoing amendments and remarks, Applicants submit that claims 1-26 are now in condition for allowance. Accordingly, early allowance of such claims is respectfully requested.



U.S. Application No. 09/583,952

To the extent necessary, Applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of Mattingly, Stanger & Malur, P.C., Deposit Account No. 50-1417 (referencing attorney docket no. 566.38616X00).

Respectfully submitted,

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